

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 January 2004 (15.01.2004)

PCT

(10) International Publication Number  
**WO 2004/005425 A1**

- (51) International Patent Classification<sup>7</sup>: **C09K 19/00**, 19/38
- (74) Common Representative: **MERCK PATENT GMBH**; Frankfurter Strasse 250, 64293 Darmstadt (DE).
- (21) International Application Number: **PCT/EP2003/005951**
- (22) International Filing Date: **6 June 2003 (06.06.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:  
**02015129.6** **6 July 2002 (06.07.2002)** **EP**
- (71) Applicant (for all designated States except US): **MERCK PATENT GMBH [DE/DE]**; Frankfurter Strasse 250, 64293 Darmstadt (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HAMMOND-SMITH, Robert [GB/GB]**; Tripps End, North End, Dammerham, Hampshire SP6 3HA (GB). **RIDDLE, Rodney [GB/GB]**; 164 Victoria Road, Parkstone, Poole, Dorset BH12 3AG (GB). **PATRICK, John [GB/GB]**; 2 Sandford Road, Wareham, Poole, Dorset BH20 4DH (GB).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **FLAKES COMPRISING NON-CHIRAL LIQUID CRYSTAL MATERIAL**

(57) **Abstract:** The invention relates to liquid crystal flakes, to methods of their preparation and to their use as pigments for security or decorative applications or optical elements.

WO 2004/005425 A1